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NEW *DIOSPYROS (EBENACEÆ)* IN WEST AND CENTRAL AFRICA

by René LETOUZEY and Frank WHITE [1]

RÉSUMÉ : 1) Démembrement de *Diospyros alboflavescens* (Gürke) F. WHITE et intégration de *Maba ituriensis* Gürke sous le nom de *Diospyros ituriensis* (Gürke) R. LET. et F. WHITE. 2) Description de 3 nouvelles espèces : *Diospyros Feliciana* R. LET. et F. WHITE de Guinée voisine de *D. Hoyleana* F. WHITE et de *D. Cooperi* (HUTCH. et DALZ.) F. WHITE, *Diospyros longiflora* R. LET. et F. WHITE du Cameroun et du Gabon représentant une espèce particulière, *Diospyros platanoides* R. LET. et F. WHITE de la Nigeria, du Cameroun et du Gabon voisine de *D. soubreana* F. WHITE.

SUMMARY : 1) Dismemberment of *Diospyros alboflavescens* (Gürke) F. WHITE and recognition of *Maba ituriensis* Gürke under the name of *Diospyros ituriensis* (Gürke) R. LET. and F. WHITE. 2) Description of 3 new species: *Diospyros Feliciana* R. LET. and F. WHITE from Guinée related to *D. Hoyleana* F. WHITE and *D. Cooperi* (HUTCH. and DALZ.) F. WHITE, *Diospyros longiflora* R. LET. and F. WHITE from Cameroun and Gabon representing a very distinct species, *Diospyros platanoides* R. LET. and F. WHITE from Nigeria, Cameroun and Gabon related to *D. soubreana* F. WHITE.

Diospyros ituriensis (Gürke) R. Letouzey et F. White, *comb. nov.*

— *Maba ituriensis* GÜRKE in ENGLER, Bot. Jahrb. **43** : 328 (1909) ; in MILDBRAED, Wiss. Ergebn. Deutsche Zentral-Afrika Exped. 1907-8, **2** : 524 (1914). Type collection : *Mildbraed 3076* (Holotype B, destroyed ; leetotype HBG), Congo (Kinshasa), Mawambi, Ituri River, ♂ fl., Apr. 1908.

— *Maba Laurentii* [*'Laurenti'*] DE WILD. in Bull. Jard. Bot. BRUX. **5** : 64 (1915); tom cit. : 386 (1919) ; Pl. Bequaert. **4** : 7 (1926), *syn. nov.* Type collection[2] : *Pynaert 1109* (Leetotype BR), Congo (Kinshasa), Eala, fl-buds, Feb. 1907.

— *Maba cylantha* PIERRE ex A. CHEV., Vég. Ut. Afr. Trop. **9** : 233 (1917), *syn. nov.* Type collections : *Klaine 375* (Syntype P ; isosyntype K), Gabon, Libreville, fr., Oct. ; *Klaine 504* (Syntype P), Gabon, Libreville, ♀ fl., Sept. 1896.

— *Maba Bequaertii* DE WILD. in Ann. Soc. Sc. Brux. **45** : 192 (1926) ; Pl. Bequaert. **4** : 4 (1926), *syn. nov.* Type collection : *Bequaert 2420* (Holotype BR), Congo (Kinshasa), Penghe, Ituri R, ♂ fl.-buds, Feb. 1914.

— *Diospyros insculpta* HUTCH. and DALZ., Fl. W. Trop. Afr. **2** : 3, 4 (1931) ; in Kew Bull. 1937 : 54 (1937) non *D. insulpta* BUCH.-HAM. (1827) *syn. nov.* Type collection: *Talbot 1609* (Holotype K), Nigeria, Calabar Province, Oban, ♂ fl.

— *Maba euosma* MILDBR. [Wiss. Ergebn. Zweite Deutsch. Zentral Afr. Exped.

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1910-11, **2** : 79 (1922), *nom. nud.*] in Notizbl. Bot. Gart. Berl.-Dahl. **9** : 1046 (1926), *syn. nov.* Type collection : *Mildbraed 5162* (Holotype B, destroyed ; lectotype HBG), Cameroun, Lomié, ♂ fl., May. 1911.

— *Maba ripicola* Mildbr. [tom. cit. : 34 (1922), *nom. nud.*] loc. cit. (1926), *syn. nov.* Type collection : *Mildbraed 3837* (Holotype B, destroyed ; lectotype HBG), Congo (Brazzaville), Dscha (Dja), below Molundu, fr., Nov. 1910.

— *Diospyros alboflavescens* auct. non (Gürke) F. White ; sensu F. White in Bull. Jard. Bot. Brux. **26** : 241 (1956) pro parte quoad syn. *Maba Laurentii*, *M. Beguaertii* et *D. insculpta* tantum ; in F.W.T.A. ed. 2, **2** : 6, 10, 14 (1963) ; in Nigerian Trees **2** : 342 (1964).

When one of us (White, 1956) attempted to accommodate all of the previously described African species of *Maba* in *Diospyros*, he sank, with some misgivings, one well-known West African and two well-known Congo species under the little known *Maba alboflavescens*, which he transferred to *Diospyros*. At that time *D. alboflavescens* was only known from the two type-gatherings from Bipindi which consisted of leaves and immature male flower-buds. These specimens appeared to match specimens of the other three species associated with it, especially certain gatherings of *Maba Laurentii*. Subsequently specimens of a third gathering of *D. alboflavescens* (*Zenker*, second series *567*) with open male flowers have come to light and clearly show that two species are involved.

D. alboflavescens differs from the three species with which it was associated in having botuliform, not ovoid-apiculate, male flowerbuds, the male corolla lobed to two-thirds not one-third, and glabrous not strigulose-puberulous stamens which are inserted on the corolla-tube, not on the receptacle.

Four other species, *Maba iturensis* Gürke, *Maba cylantha* Pierre ex A. Chev., *Maba euosmia* Mildbr. and *Maba ripicola* Mildbr. must be associated with the three wrongly placed in synonymy under *D. alboflavescens*. Of the seven available epithets " *iturensis* " is the earliest and is combined in *Diospyros* here.

D. alboflavescens as now circumscribed is one of the most poorly collected African species. Collectors are requested to obtain more material, especially female flowers and fruits so that it can be completely described.

Diospyros Feliciana R. Letouzey et F. White, *sp. nov.*

Inter species africanas occidentalis ob folia parva siccitate nigra prope *D. Hoyleana* F. White et *D. Cooperi* (Hutch. et Dalz.) F. White tantum ponenda; a *D. Hoyleana* foliis basi minus asymmetricis, apice minus attenuatis, calyce in flore fœmineo 4.5 mm longo haud 1.5 mm longo, lobis calycis acutis haud suborbiculatis, endospermio lævi haud ruminato satis distincta; a *D. Cooperi* foliis apice emarginatis haud acuminatis, fructibus ovoideo-conicis haud subglobosis, subsessilibus haud longe (4.0-6.0 mm) pedicellatis facile distinguenda.

Arbor parva, 4-6 m alta. *Folia* basin versus supra subtusque pilis

paucis brevibus exceptis glabra, 3.2 × 1.5 — 8.5 × 2.6 cm, lanceolata, lanceolato-elliptica vel elliptica, apicem versus fere subacuminata, apex ipse emarginatus; nervi laterales utrinsecus ca. 6, ægre discernendi, supra prominuli, subtus leviter impressi; rete venularum non visibile. *Flores masculi* ignoti. *Flores fœminei* in inflorescentiis axillaribus unifloris dispositi vel in axillis foliorum delapsorum solitarii; pedicellus crassus, 1.0 mm longus, dense setulosus. Calyx 4.5 mm longus, in statu fructifero haud accrescens, extus sparse strigulosus, ad 2/5 3-4-lobatus, lobis deltatis, apiculatis. Corolla ignota. Ovarium glabrum, 6-loculare, loculis uni-ovulatis; styli 3, 1.75 mm longi, erecti, a basi usque ad medium connati apice stigmatoso distincte capitato. *Fructus* 2.5-3.0 × 1.6-1.8 cm, ovoideo-conoideus, stylis persistentibus, 4-usque 6-spermus, verruculosus, glaber, siccitate atratus, lucens. Semen ca. 15.0 × 5.0 × 4.0 mm; endospermium haud ruminatum.

Guinée : Nr. Kindia, immature fr., *Jacques-Félix s. n.* (Holotype P). Benna, immature fr., Oct. 1956, *Jacques-Félix 7181* (Paratype P). Lanfofomé river, fr., March 1904, *Pobéguin 910* (Paratype P).

D. Feliciana appears to be endemic in forest vegetation occuring in a torrent gullies carved in Benna sandstone plateau (1 000-1 200 m) of Guinée, with various other shrubs such as *Eugenia leonensis*, *Memecylon fasciculare*, *Olea Hochstetteri*, *Vincentella Passargei*...

The Pobéguin specimen was examined by one of us (F. W.) when writing the account of the *Ebenaceæ* for the second edition of the Flora of West Tropical Africa and was mentioned in a note under *D. Cooperi* as possibly being related to that species. The two *Jacques-Félix* specimens were discovered by the other author of this note (R. L.) while sorting unnamed West African material and immediately suggested a relationship with *D. Hoyleana*.

Until more complete material is available it will not be possible to place *D. Feliciana* more closely, but on present evidence it appears to be more closely related to *D. Hoyleana*, despite the wide interval of 2700 km separating their geographical ranges.

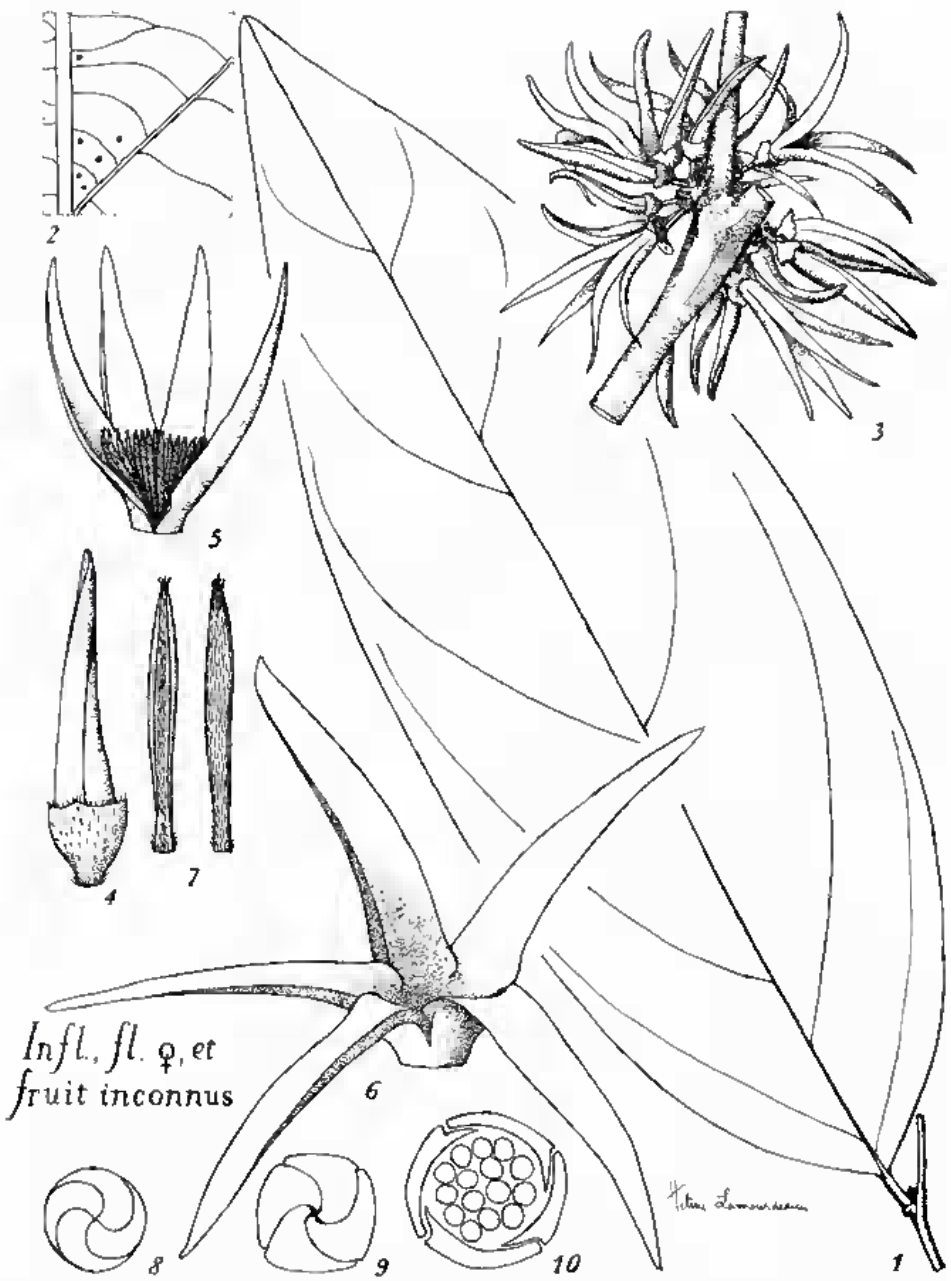
The epithet is chosen to honour Mr. H. Jacques-Félix, distinguished contributor to African botany.

Diospyros longiflora R. Letouzey et F. White, *sp. nov.*

Species inter *Diospyres* maxime insignis foliis magnis lanceolatis, subter in vivo glaucis, sicut floribus masculis longis, segmentis corollæ fere usque ad basim liberis, crassissimis.

Frutex, 7 m altus. Rami juniores, petioli, nervique subtus pilis sparsis instructi deinde glabri. *Folia* lanceolata vel oblongo-lanceolata, usque 38 × 12 cm, basin versus obtusa, apice acuta; nervi laterales adscendentes utrinsecus ca. 5, nervi tertiarii costæ fere perpendiculares; omnes nervi

1. Eight paratypes were also cited. Details are not given here.



Pl. 1. — **Diospyros longiflora** R. Let. et F. White : **1,** Leaf × 2/3; **2,** Lower surface detail of the leaf × 2; **3,** ♂ inflorescence × 1; **4,** ♂ flower bud × 2; **5,** ♂ flower, corolla cut showing stamens × 1,5; **6,** Corolla ♂ flower × 2; **7,** Stamen × 4; **8,** ♂ flower bud transversal section near the apex; **9,** idem at half high; **10,** idem near the base (8, 9, 10 : × 6). From *De Wilde W. 1735* (holotype), Cameroun.

subtus prominuli; rete venularum laxum ægre visibile; lamina coriacea, subter in vivo glauca, in sicco albida; glandulæ minutæ aliquot in axillis nervorum lateralium locatæ. *Flores masculi* subfasciculati in inflorescentiis axillaribus cymosis paucifloris conferti vel in inflorescentiis ca. 10-floris in ramis veteribus dispositi; pedicellus 3-5 mm longus, pubescens. Calyx cupulatus, 4 mm longus, extus intusque sparsim pubescens, margine truncato 4-5 denticulato, sæpe irregulariter fisso. Corolla in alabastro maxime cuneatim decrescens, pilis sparsis tecta, segmentis 4-5 fere usque ad basim liberis, 2.5 cm longis, crassissimis, ab exteriore visis per speciem basi valvatis. Stamina 12-15 in receptaculo inserta, antheris subsessilibus, linearibus, 5 mm altis, strigosis, apiculatis. *Flores fœminei* et *fructus* incogniti.

Cameroun (East) : 50 km S of Badjob, nr. Eséka, along the Nyong river close to the large bridge, ♂ fl., Janv. 1964, *De Wilde W. 1735* (Holotype WAG).

Gabon : Cristal mountains, nr. Méla, stér., *Normand s.n.* (Paratype P).

Just now this species is poorly collected and its female flowers and fruits are unknown; but it is well characterised by its leaves and by the corolla of its male flowers. De Wilde notes also that it is a little tree, 7 m high and 25 cm in diameter, with stem blacklish to dark brown and with dark green leaves and creamy yellow corolla; in dried specimens, leaves are brownish green above and somewhat whitish below, at least for young leaves.

D. longiflora appears to occur in rain forest.

Diospyros platanoides R. Letouzey et F. White, *sp. nov.*

— *D. sp. B.* F. White in Keay, Onochie and Stanfield, Nigerian Trees **2** : 344 (1964).

D. soubreanæ F. White affinis, sed habitu arbor parva vel mediocris cortice ut in *Platano* desquamato, foliis apicem versus magis abrupte coarctatis, pedicello in flore masculo breviore, calyce in flore masculo leviter lobato lobis rotundatis non calyce profunde lobato non lobis anguste deltatis satis distincta.

Arbor parva vel mediocris, dioica, 11-20 m alta. *Folia* 7.5 × 3.0-11.5 × 4.5 cm, oblongo-elliptica vel oblanceolato-oblonga, apice acuminata, pilis paucis strigulosis in nervis subtus exceptis, glabra; nervi laterales utrinsecus 7-9. *Flores masculi* subfasciculati in inflorescentiis cymosis 2-5-floris conferti, in axillis foliorum vel in axillis foliorum delapsorum dispositi. Calyx 2.25 mm longus, glaber, ad 1/3 3-4 lobatus, lobis 1.0 × 2.5 mm, rotundatis. Corolla urceolata, extus glabra, intus fauce sparse strigulosa, 6.0 mm longa, 3.5 mm lata, ad 1/4 4-lobata. Stamina ca 14, irregulariter biseriata, basi corollæ tubi inserta; filamenta 1.5-2.5 mm longa, applanata, margine setulosa; antheræ 0,75 mm longæ, lanceolatæ, apicu-

latæ, margine setulosæ aliter glabræ. Ovarium rudimentarium 2.5 mm longum, 1.0 mm latum, ovoideum, apiculatum, glabrum. *Flores fœminei* et *fructus* ignoti.

NIGERIA : Eastern Region, Ojoga Province, Ikom Division, Cross River North Forest Reserve, ♂ fl.-buds, May 1961, *Lalilo & Olorunfemi FHI 43940* (Paratype FHO).

CAMEROUN (WEST) : Mamfia Province, Lake Ejaghan Forest Reserve, ♂ fl., March. 1963, *F. White 8559* (Holotype K; isotypes FHO, P), id., st., March. 1963, *White 8558* (Paratype FHO).

GABON : Koulamotou, 40 km SSW of Lastoursville, ♂ fl.-buds, Nov. 1930, *Le Testu 8550* (Paratype P; iso-paratypes BM, FHO).

Diospyros platanoides is undoubtedly very closely related to *D. soubreana*, but, since they differ in distribution, ecology and (markedly) in habit, and can be separated on a number of small but well-correlated differences, the former clearly deserves recognition as a species. These two species differ from each other as much as the members of many of the " séries écophylétiques " anticipated by CHIPP (1927) and recognised by AUBRÉVILLE (1949) and most serious students of the African flora e.g. *Pericopsis* (*Afrormosia*) *elata*, *laxiflora* and *angolensis*, *Lophira alata* and *lanceolata*, or *Diospyros balocana* and *chamæthamnus* (see WHITE, 1962).

D. soubreana is a sparsely branched treelet never more than 5 m tall and usually much less. Its main stem rarely exceeds 3-4 cm in diameter. *D. platanoides* is a fair-sized tree which can attain a height of 20 m. Its bole can be 30 cm in diameter and is distinctly fluted. The bark is smooth and falls away in circular scales up to 12 cm in diameter like that of a Plane tree (*Platanus*).

D. soubreana occurs in moist lowland tropical forest on both sides of the Dahomey interval in West Africa. For Côte d'Ivoire, Ghana and Dahomey little precise information is available on its ecology, but most of the records are from the area occupied by the drier semi-deciduous variant. All the records from Ghana, for instance, are from the drier *Celtis-Triplochiton* and *Antiaris-Chlorophora* " associations " and none are from the wetter *Lophira-Triplochiton* association or from true " rain forest " of TAYLOR's (1952) classification.

For Nigeria its ecological characteristics are better documented. Here it is confined to semi-deciduous moist lowland forest of the Western Region where the rainfall lies between 1200 and 1625 mm (48-65 in) per annum.

At Gambari Forest Reserve in Ibadan Province WHITE (unpublished observations 1962) found it growing in the shrub layer of high forest characterised by the following species : *Albizia glaberrima*, *Aningeria robusta*, *Antiaris africana*, *Bosquiea angolensis*, *Brachystegia nigerica*, *Ceiba pentandra*, *Celtis Brownii*, *C. Zenkeri*, *Chlorophora excelsa*, *Cola*

gigantea, *Cordia Millenii*, *Daniellia Ogea*, *Morus mesozygia*, *Phyllanthus discoideus*, *Pterocarpus Osun*, *Pterygota macrocarpa*, *Ricinodendron Heudelotii*, *Sterculia rhinopetala*, *Tetraplera tetrapleura*, *Terminalia ivorensis*, *T. superba* and *Triplochiton scleroxylon*. Collectors have frequently mentioned the following associates in their notes : *Celtis* spp., *Cola gigantea*, *Terminalia superba*, *Sterculia rhinopetala*, *Triplochiton scleroxylon* and *Nesogordonia papaverifera*. It has not been found in the wetter evergreen forests of south and south-east Nigeria.

In contrast, *D. platanoides* is absent from the semi-deciduous forests, but appears to be confined to the wetter evergreen forests, where the rainfall exceeds 2 500 mm (100 in) per annum. Its known range extends from the extreme eastern part of Nigeria to central Gabon and appears to lie entirely within the limits of the " forêt biafréenne à Césalpiniacées " of Letouzey (1966 and 1968).

At Lake Ejaghan Forest Reserve, Mamfe Division, West Cameroun, White found it growing in the understorey of undisturbed primary forest surrounding the lake. This forest which lies in a sparsely populated region had not been exploited and had apparently been avoided for farming for superstitious reasons. Light demanders such as *Lophira alata*, *Terminalia ivorensis*, *Musanga cecropioides* and *Lovoa* were very rare or (other *Meliaceae*) absent. Characteristic species included : *Antrocaryon micraster*, *Barteria fistulosa*, *Brachystegia Kennedyi*, *Calpocalyx* sp. (*White 8586*), *Diospyros conocarpa*, *D. Hoyleana*, *D. ilurensis*, *D. melocarpa*, *Erythrophleum ivorense*, *Gilbertiodendron* sp. (*White 8574*), *Guarea Thompsonii*, *Gossweilerodendron balsamiferum*, *Hylodendron gabunense*, *Klainedoxa gabonensis*, *Monopetalanthus* sp. (*White 8598*), *Pipladeniastrum africanum*, *Poga oleosa*, *Nauclea Diderrichii*, *Pentaclethra macrophylla*, *Sacoglottis gabonensis*, *Staudtia stipitata* and *Tessmannia africana*.

A gap of 400 km separates the nearest known stations of *D. soubreana* and *D. platanoides*.

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